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EXAMINER

BARON, HENRY

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/597,339	PENNANCE, NICHOLAS RICHARD	
	Examiner	Art Unit	
	HENRY BARON	2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-9 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-9 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Detailed Action

EXTENDING THE RANGE OF A HAND-PORTABLE RADIO

Response to Arguments/Remarks

1. Claims 1 – 9 are pending in the application.
2. Claims 1, 6, and 9 have been amended;
3. Applicant's arguments filed 9/21/2011 have been fully considered but they are not persuasive.
4. Regarding claims 1,6, and 9, the Applicant argues that the reference Dinkins discloses a store and forward receiver which is used in combination with a subscriber unit, a remote receiver and a local base station repeater cell so that when the subscriber unit is out of receiving distance from the repeater cell, the subscriber unit receives data from the store and forward receiver directly.
5. Applicant argues that the claimed invention enables a conventional mobile radio (mounted in a vehicle) to be programmed as a repeater between a portable radio (carried by a user) and the network where the duplex (two way) channel of the conventional radio is split into two half duplex channels, one of which is used for communication between the portable and the mobile, the other being used between the mobile and the network.
6. Applicant argues that Dinkins and Mulford both disclose examples of costly radio systems, which could possibly be replaced by the Applicant's invention in some circumstances – where Lee et al. is an example of a local computer network, in an office environment, for example, which uses infra-red channels between units. These require line-of-sight between the units, and would never have been considered by a radio engineer involved in development of a wide area radio network; and Mulford discloses a voice repeater system with full duplex channels between mobile repeater 104 and portable 105, and between the repeater and the network units i01, 103 (Fig.1). The repeater uses full duplex channel (F1, F2) for communication with the portable, and a full duplex channel (F2, F3) for

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communication with the network. This is a relatively expensive general purpose system and there is no suggestion that half duplex channels could be used as an alternative.

7. Dinkins discloses a store-and-forward repeater 22 which sends messages in one direction only, from the base station 1 to the terminal 12 (Fig. 2). The Patent Office mistakenly discusses this part of the system in detail, as if messages could be sent in both directions. An entirely separate path is taken by messages sent from the terminal to the network, involving a receiver 16. The terminal 12, the repeater 22, and the receiver 16 are all fixed items of equipment, which is an entirely different arrangement to portable radios and vehicle mounted radios in a radio network. It is not stated whether the channels are full duplex or half duplex, because details of this kind are not relevant. Applicant argues that Dinkins relates primarily to data gathering by "telematics", as described in US Patent No. 5,388,101 where Dinkins reference (US 5,633,876) attempts to improve on the earlier system by adding the fixed repeater 22, to what is effectively an existing fixed repeater 16. Applicant argues that the arrangement of this kind would be entirely inefficient in the context of the present invention as the repeaters 16 and 22 are dedicated items of equipment.

8. The Examiner replies that the three prior art references cited were available to one of ordinary skill in the art to combine in an obvious fashion one would have been motivated to do so,

9. As the Applicant conceded, Mulford shows an on-board station which receives and forwards emergency messages from a portable station to a central station when the mobile station is out of range. Further, the range extending mode of operation is entered to only 'If, after a first predetermined period of time has elapsed, the mobile communication unit determines that the digital voice message is not being re-transmitted, in real time, by a broadcast unit (101), mobile repeater is enabled *by the mobile communication unit (sic portable station)* and the digital voice message is re-transmitted as a mobile repeated message, thereby effectively extending the transmitting range of the portable communication unit.' – or in other words, 'wherein the on-board station receives further comprises programming enabling

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receiving messages from the portable station over a channel when the on-board station is within range of the network but the portable station is out of range of the network. Mulford teaches a mode of operation before 'predetermined period of time has elapsed' in Figure 1, a system where 'wherein the vehicle mounted, user-operated on-board radio station and the user-operated portable radio station are capable of communicating with the network independently, of each other'

10. Lee is relied on teaching where the on-board station receives messages over a half duplex channel and Dinkins is relied to teach of a store and forward repeater that can be used to extend communication in one direction.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

a. A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 – 3, 5 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dinkins, (U.S. Patent (5,633,876), in view of Lee et al (U.S. Patent 5099346) hereafter Lee and in further view of Mulford (U.S. Patent 5768683)

3. With regards to claims 1, 6, and 9, Dinkins teaches a system and method for mobile radio communication, including: a network having one or more radio base stations and a central station; (3: [0032] read As shown in FIG. 2, store and forward repeater 22 includes a receiver 24, memory 26, controller 28, transmitter 30, and power supply 32. In the present embodiment, local base station repeater cell i.e. one or more radio base stations broadcasts data signals on an rf carrier frequency i.e. a central station) user operated on-board radio station having a range sufficient for communication with the network, and comprising circuitry for full duplex audio and data communication with other stations; (3:

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[0034] read With reference next to FIG. 2, a communication system including a store and forward repeater 22 for relaying data signals between a local base station repeater cell 10 i.e. on-board radio station having a relatively long range for communication with other stations and a subscriber unit 12 is shown.) where the on-board station receives messages from the portable station when the on-board station is within range of the network but the portable station is out of range of the network; stores the messages and forwards the messages to the network over a different radio channel. (4: [0007] read [I]n the present embodiment, the receiver of subscriber unit 12 is tuned to receive data signals broadcast from store and forward repeater 22 i.e. on-board station on an rf carrier in the range of approximately 218-219 MHz. Thus, in the present embodiment, the frequency of the rf carrier used to transmit data signals from local base station repeater cell 10 to store and forward repeater 22 is the same as the frequency of the rf carrier used to transmit data signals from store and forward repeater 22 to subscriber unit 12. However, in order for the same carrier frequency to be used in link 11 and link 23, any data signals broadcast from local base station repeater cell 10 must be extremely weak, for example less than 95 dBm, at subscriber unit 12 i.e. when the on-board station is within range of the network but the portable station is out of range of the network AND stores the messages and forwards the messages to the network over a different radio channel. If data signals broadcast from local base station repeater cell 10 are not extremely weak, subscriber unit 12 can receive data signals from both local base station repeater cell 10 and store and forward repeater 22.).

4. . Mulford teaches a mode of operation before 'predetermined period of time has elapsed' in Figure 1, a system where 'wherein the vehicle mounted, user-operated on-board radio station and the user-operated portable radio station are capable of communicating with the network independently, of each other'

5. Dinkins does not disclose where the on-board station receives messages from the portable station over a half duplex channel.

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6. Lee teaches (see Abstract) of an infrared data communications network in which groups of personal computers and associated peripherals may communicate by infrared signals with each other i.e. where the on-board station receives messages from the portable station over a half duplex channel.

NOTE; infrared signal communication over the same channel is inherently half duplex channel.

7. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Dinkins with the teachings of Lee.

8. In this manner, a low power and low cost, half duplex mobile unit can communicate to a base station using a higher power, but economical store and forward repeater, forming a useful and dynamic system.

9. In regards to claims 2 and 8, Dinkins modified teaches of a system wherein the on-board station receives and forwards messages from the portable station to the central station. (3: [0032] read As shown in FIG. 2, store and forward repeater 22 includes a receiver 24, memory 26, controller 28, transmitter 30, and power supply 32. In the present embodiment, local base station repeater cell i.e. one or more radio base stations broadcasts data signals on an rf carrier frequency i.e. a central station .. and 3: [0034] read With reference next to FIG. 2, a communication system including a store and forward repeater 22 for relaying data signals between a local base station repeater cell 10 i.e. on-board radio station having a relatively long range for communication with other stations and a subscriber unit 12 is shown.).

10. Dinkins does not disclose of *emergency* messages per se.

11. Mulford teaches where the on-board station receives and forwards emergency messages from the portable station to the central station. (6:[0023] read When the mobile is associated with the portable, the special condition indicator is detected in the voice message at step 402. In a preferred embodiment, the special condition indicator is used to indicate the occurrence of an emergency situation i.e. on-board station receives and forwards emergency messages, as would typically be required in public safety systems, e.g., police and fire departments. It is understood that a special condition indicator could be used

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to specify any of a number of circumstances as required by a particular system i.e. on-board station receives and forwards.)

12. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Dinkins with the teachings of Lee and Mulford.

13. In this manner, in an emergency situation, a mobile user can communicate with a remote user for emergency assistance.

14. With respect to claim 3, Dinkins modified, teaches the limitations of claim 1, but does not disclose of a system where the portable station and the on-board station communicate messages in either direction over a half-duplex radio channel

15. Lee teaches of infra-red channel communications that are inherently half-duplex, but does not disclose of short data messages or voice messages.

16. Mulford teaches of where voice messages may be transmitted over the on-board station receives and forwards voice messages (Abstract; A digital voice message, including a continuously embedded portable identification code, is transmitted by a portable communication unit (105) to a mobile communication unit (104) and to broadcast units (101-103). i.e the on-board station receives and forwards voice messages).

17. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Dinkins with the teachings of Lee and Mulford.

18. In this manner, in a non-emergency situation, a mobile user can communicate with a remote user providing status information using either voice or data messages.

19. In consideration of claim 5, Dinkins teaches where the on-board station and the portable station are wireless, mobile devices where the portable station is associated with the on-board station. (3: [0032] read With reference next to FIG. 2, a communication system including a store and forward repeater 22 for relaying data signals between a local base station repeater cell 10 and a subscriber unit 12 is shown. As

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shown in FIG. 2, store and forward repeater 22 includes a receiver 24, memory 26, controller 28, transmitter 30, and power supply 32. In the present embodiment, local base station repeater cell 10 broadcasts data signals on an rf carrier frequency. The rf link between local base station repeater cell 10 and store and forward repeater 22 is shown as link 11. The data signals are received by receiver 24 of store and forward repeater 22. Receiver 24 is tuned to the rf carrier frequency of local base station repeater cell 10. In the present embodiment, receiver 24 is tuned to receive rf transmissions in the range of approximately 218-219 MHz. Although receiver 24 is tuned to approximately 218-219 MHz in the present embodiment, the present invention is also well suited to having receiver 24 tuned to other frequencies matching the transmission frequency of local base station repeater cell 10. Store and forward repeater 22 stores the data signals in memory 26.)

20. Dinkins does not disclose where the on-board station is carried by a vehicle and the portable station is carried by an individual associated with the vehicle.

21. Mulford teaches where the on-board station is carried by a vehicle and the portable station is carried by an individual associated with the vehicle (6:[0023] read When the mobile is associated with the portable, the special condition indicator is detected in the voice message at step 402. In a preferred embodiment, the special condition indicator is used to indicate the occurrence of an emergency situation i.e. on-board station receives and forwards emergency messages, as would typically be required in public safety systems, e.g., police and fire departments. It is understood that a special condition indicator could be used to specify any of a number of circumstances as required by a particular system i.e. on-board station receives and forwards. i.e. the on-board station is carried by a vehicle and the portable station is carried by an individual associated with the vehicle.)

22. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Dinkins modified in this manner, so that the wireless device can

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communicate with a base station using a store and forward repeater freeing the mobile user from carrying a bulky communication device.

23. Regarding claim 7, Dinkins teaches wherein the on-board station receives messages from the portable station on one channel and transmits the messages on a different channel. (4: [0057] read In another embodiment of the present invention, in instances where data signals broadcast from local base station repeater cell 10 are not extremely weak at each of the respective receiving subscriber units, the frequency of the rf carrier used to transmit data signals from local base station repeater cell 10 to store and forward repeater 22 is different than the frequency of the rf carrier used to transmit data signals from store and forward repeater 22 to subscriber unit 12. That is, link 11 has a different carrier frequency than link 23. In such an embodiment, subscriber unit 12 is tuned to the frequency of the of the rf carrier transmitted from store and forward repeater 22 i.e. the on-board station receives messages from the portable station on one channel and transmits the messages on a different channel)

24. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dinkins, (U.S. Patent (5,633,876), in view of Lee et al (U.S. Patent 5099346) hereafter Lee, in further view of Mulford (U.S. Patent 5768683), and in further view of Proctor (U.S. Patent Application 20060183421).

25. With respect to claim 4, Dinkins modified teaches the limitations of claim 1 – in particular of half duplex mobile unit to store and forward repeater communication, but fails to disclose where the portable and on-board stations each have a duplex mode for communication with the network by data and a half-duplex mode for communication between each other by messages.

26. Proctor teaches of a multimode (duplex and half-duplex) communications where the portable and on-board stations each have a duplex mode for communication with the network by data and a half-duplex mode for communication between each other by messages. (5: [0041] read [T]o appreciate the operation of the physical layer repeater 200, two scenarios 210 and 220 are shown in FIGS. 2A, 2B, (full duplex) 2C and 2D (half duplex). In a pure PHY layer mode of operation, as shown in scenario 210, a

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configuration 211 is shown in FIG. 2A where a signal is received on a first frequency F1 and repeated on a second frequency F2. The flow diagram 212 of FIG. 2B shows that the packets are essentially received and transmitted at the same time (full duplex). A non-physical layer repeater configuration 221 is shown in FIG. 2C including repeater sections for transmitting and receiving on the same frequency F1 i.e. half duplex. On the receive side, the baseband processing and MAC processing are conducted and, for example, address information is extracted and stored.)

27. It would have been obvious at the time the invention was made by a person of to having ordinary skill in the art to modify the teachings of Dinkins modified with the teachings of Proctor.

28. In this manner, a multimode (duplex and half-duplex) communications link where a portable and on-board stations each depending on channel conditions and attributes of the message.

FINAL ACTION

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action

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Conclusion

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENRY BARON whose telephone number is (571)270-1748. The examiner can normally be reached on 7:30 AM to 5:00 PM E.S.T. Monday to Friday.

30. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

31. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/H. B./ Examiner, Art Unit 2462

HOB

/Nittaya Juntima/

Primary Examiner, Art Unit 2462